Claims

[c1] 1. A container closure for a container comprising:

a top;

an annular side wall extending from the top, the side wall having an internal thread adapted to engage with threads of the container around a container opening; and

a tamper-evident portion on a lower portion of the side wall, the tamper-evident portion including a plurality of leaders extending across a score line to a lower band, the lower band including a substantially continuous internal projection below the leaders, wherein the projection includes an angled portion for a portion of the circumference forming a lead-in thread for the projection.

[c2] 2. The closure as claimed in claim 1 wherein the angled portion extends for about ninety degrees of the circumference.

[c3] 3. The closure as claimed in claim 2 further including a plug seal on the top, wherein the angled portion includes a rounded end, and wherein the angled portion is angled in the same direction as the threads on the side wall.

[c4] 4. The closure as claimed in claim 1 wherein the projection is a rib having a length-to-width ratio of at least one and one-half.

[c5] 5. The closure as claimed in claim 4 wherein the rib is substantially rectangular in cross-section, has a length-to-width ratio of at least two, and is angled away from the top.

[c6] 6. A tamper-evident portion for a container closure wherein the tamper-evident portion is on a lower portion of the side wall of the container closure, the tamper-evident portion comprising:

a lower band;

a score line between the lower band and the side wall of the container closure;

a plurality of leaders extending across the score line between the lower band and the side wall of the container to connect the lower band to the side wall; and

a substantially continuous internal projection on the lower band below the

leaders, wherein the projection includes an angled portion for a portion of the circumference forming a lead-in thread for the projection.

[c7] 7. The tamper-evident portion as claimed in claim 6 wherein the angled portion extends for about ninety degrees of the circumference.

[c8] 8. The tamper-evident portion as claimed in claim 6 wherein the projection is a rib having a length-to-width ratio of at least one and one-half and wherein the angled portion includes a rounded end.

[c9] 9. The tamper-evident band as claimed in claim 6 wherein the rib is substantially rectangular in cross-section, has a length-to-width ratio of at least two, and is angled away from the leaders.

[c10] 10. An injection mold for forming a mold part in the form of a closed annular structure having a continuous internal rib having a length-to-width ratio of at least one and one-half, the mold including a core forming the interior of the closed annular structure, wherein the core is separated into a movable core portion and a remaining core portion at a separating line defined at the internal rib, wherein the moveable core is moveable away from the remaining core during ejection of the mold part following the molding process wherein a space is formed for the rib to move into during the ejection process by the movement of the moveable core.

[c11] 11. The mold as claimed in claim 10 wherein the core forms internal threads on the molded part.

[c12] 12. The mold as claimed in claim 11 wherein the core forms a tamper-evident portion in the molded part.

[c13] 13. The mold as claimed in claim 12 wherein the rib is a retaining element for the tamper-evident portion.

[c14] 14. The mold claimed in claim 11 wherein the molded part is a flat cap with internal threads and a tamper-evident portion and wherein the core forms the internal threads and leaders for the tamper-evident portion, and the rib is part of the tamper-evident portion.

[c15] 15. A method of injection molding a mold part in the form of a closed annular structure having a continuous internal rib having a length-to-width ratio of at least one and one-half, the method comprising the steps of:
providing a mold with a mold cavity between a pair of mold halves with one mold half including a core forming the interior of the closed annular structure, wherein the core is separated into a movable core portion and a remaining core portion at a separating line defined at the internal rib;
injecting resin into the mold cavity;
opening the mold cavity;
moving the moveable core and molded part away from the remaining core during ejection of the mold part following the injection molding to form a space beneath the rib of the molded part; and
ejecting the molded part from the moveable core wherein the rib is moved into the space formed by the movement of the moveable core.

[c16] 16. The method as claimed in claim 15 further comprising the steps of molding internal threads onto the molded part and unthreading the molded part from the moveable core during the ejection process.

[c17] 17. The method as claimed in claim 15 wherein the molded part is a flat cap container closure.

[c18] 18. A product formed by the process of claim 15.

[c19] 19. A one-piece injection molded container closure for a container comprising:
a top;
an annular side wall extending from the top, the side wall having an internal thread adapted to engage with threads of the container around a container opening; and
a substantially continuous internal rib having a length-to-width ratio of at least one and one-half.

[c20] 20. The container closure as claimed in claim 19 wherein the rib is substantially rectangular in cross-section, has a length-to-width ratio of at least two, and is angled away from the top.